BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 Diploma in Engineering Pearson BTEC International Level 3 Diploma in Electrical/Electronic Engineering Pearson BTEC International Level 3 Extended Diploma in Engineering Pearson BTEC International Level 3 Extended Diploma in Electrical/Electronic Engineering
Unit number and title	**Unit 17: Power and Energy Electronics**
Learning aim(s)	**C:** Investigate sustainable applications of power electronics
Assignment title	Power Electronics and Sustainability
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	You are a final year apprentice technician for an engineering organisation that specialises in the development of sustainable systems that use power electronic devices. Your supervisor is pleased with your knowledge and understanding of the applications of power electronic devices and has asked you to investigate how they can be used to improve to improve sustainability. Your supervisor would like you to investigate the applications of power electronics, the sustainability issues that relate to power electronics and also the regulations in your regional, national or international location, that relate to power electronics.
Task 1	You are going to investigate and evaluate how power electronics can be used to increase the sustainability of systems. **To do this you need to:** Research and evaluate potential uses of power electronics to increase sustainability in **two** of the following areas: • Electricity generation and supply • Renewable energy sources • Transportation • Industrial process applications Produce a report that provides an investigation into how power electronics can impact on sustainability. Your report should: • consider the drivers for development of power electronics, including international targets for a low-carbon economy. • investigate the potential for using power electronics to reduce CO_2. Your report should consider in detail the purpose of each application, the specific technology that is needed to implement the application, and also whether it is possible to implement the technology currently. You should make use of diagrams, charts and tables to support the findings of your investigation for each of the applications chosen. You will also need to investigate the sustainability and regulatory issues related to the identified applications. This will need to take into account: • Sustainability issues, including environmental impact in your regional or national location. • Ethics, including professional standards • Professional engineering principles for sustainability and ethical

	development • Regulations relating to power electronics in your regional or national location. Use your report to draw conclusions regarding the use of power electronics to improve the sustainability of two different applications.
Checklist of evidence required	A written report.
Criteria covered by this task:	
Unit/ Criteria reference	To achieve the criteria you must show that you are able to:
17/C.D3	Evaluate how power electronic devices can be used in two different applications to improve sustainability.
17/C.M7	Analyse how power electronic devices can be used in two different applications to improve sustainability.
17/C.P7	Explain how power electronic devices can be used in two different applications to improve sustainability.
Sources of information to support you with this Assignment	Books Fundamentals of Materials for Energy and Environmental Sustainability; Ginley, D and Cahen, D.; Cambridge University Press, 2011; ISBN 9781139502689 Future Electricity Technologies and Systems; Jamasb, T et al; Cambridge University Press, 2011; ISBN 9780521860499 Websites ec.europa.eu/clima/policies/strategies . energy-uk.org.uk/energy-industry/sustainability.html Further useful resources may be found at qualifications.pearson.com/en/support/published-resources.html#step1